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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,299	07/28/2003	Reiyao Zhu	HT3920 US NA	6457

23906 7590 08/29/2005

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WILMINGTON, DE 19805

EXAMINER

BEFUMO, JENNA LEIGH

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 08/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/629,299

Applicant(s)

ZHU, REIYAO

Examiner

Jenna-Leigh Befumo

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5/05; 11/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. Claims 1 – 19 are pending.

#### *Double Patenting*

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1 – 19 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 – 20 of copending Application No. 10/630,102 in view of Edwards (GB 2152542 A). Application 10/630,102 claims an intimate fiber blend of aramid fibers, nylon fibers, and fire retardant cellulosic fibers. Thus, 10/630,102 claims a blend using fire retardant cellulosic fibers instead of modacrylic fibers. Edwards discloses fire retardant fabrics can be made from yarns comprising blends of fire retardant fibers selected from the group consisting of aramid fibers, modacrylic fibers, fire retardant polyester fibers, and fire retardant viscose fibers (abstract). The fire retardant fibers have different fire retardant characteristics and physical properties such as wear resistance, strength, hand, and dimensional stability (page 1, lines 14 – 20). Thus, picking the fire retardant fibers in the blend allows one of ordinary skill in the art to optimize or customize the fire retardant and physical properties of the finished fabric for the specific end use of the fire

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retardant fabric (page 1, lines 108 – 130). Therefore, it would have been obvious to one having ordinary skill in the art to substitute known fire retardant viscose fibers for the modacrylic fibers used in the blend claimed by the applicant since Edwards discloses the types of fire retardant fibers in the blend can be chosen to customize or optimize the fire retardant properties as well as the physical properties the fibers bring to the end product such as comfort, texture, wear resistance, strength and dimensional stability.

This is a provisional obviousness-type double patenting rejection.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 – 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichibori et al. (5,503,916) in view of Edwards (GB 2 152 542 A).

Ichibori et al. discloses a flame retardant fiber blend comprising 15 to 85 parts by weight of a flame retardant fiber comprising a polymer containing a halogen and Sb component and 85 to 15 parts by weight of a fiber selected from the group of natural and chemical fibers (abstract). The blending ratios is chosen based on the flame resistance required in the end product and the other desired properties such as appearance, touch, hygroscopic properties, washing resistance, durability and the like of the end product (column 4, lines 15 – 24). The flame retardant fiber is a modacrylic fiber produced by reacting a halogen containing polymer such as vinylidene chloride or copolymers of an acrylonitrile and vinylidene chloride (column 2, lines 43 – 67). The

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Sb compound can be selected from inorganic antimony compounds and is added for flame retardance (column 3, lines 24 – 30). When the flame retardant fibers comprises more than 85% by weight of the blend, the end product will have excellent fire resistance, but the other properties such as appearance, touch, wash resistance, hygroscopic property, and durability are not sufficient (column 4, lines 30 – 36). The natural and chemical fibers which can be added alone or combined together, to the fire retardant fiber to improve the comfort and additional properties of the fabric include cotton, viscose rayon, nylon, and the like (column 4, lines 52 – 64). The fibers are blended as staple fibers and then twisted and spun to form staple yarns which can be used to form woven, knit, or non-woven fabrics (column 5, lines 10 – 23). While Ichibori et al. discloses a fire retardant fabric made from a yarn comprising modacrylic fibers and polyamide (or nylon) fibers, Ichibori et al. fails to teach adding aramid fibers to the blend.

Edwards is drawn to a fire retardant fabric made from a blend of fire retardant fibers. Edwards discloses that fire retardant fibers have different fire retardant characteristics and also differ in other properties such as wear resistance, strength, hand, and dimensional stability (column 1, lines 14 – 20). The fiber blend is based on various factors and is usually a compromise between performance and cost (page 1, lines 20 – 27). Aramid fibers can be added to fabrics for abrasion or wear resistance, while modacrylic fibers are added for comfort (page 1, lines 17 – 120). Additionally, Edwards discloses blended staple yarns blends of modacrylic and aramid fibers (page 2, lines 15 – 20). Thus, it would have been obvious to one having ordinary skill in the art to add an additional fire retardant fiber such as aramid to the blend taught by Ichibori et al. since the blend will maintain desired fire resistance of the end product while improving the wear or abrasion resistance of the fabric and still producing a fabric with

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improved comfort and appearance properties. Further, it would have been obvious to one having ordinary skill in the art to optimize the amount of each fiber type in the final product based on the desired wear, comfort, and appearance properties of the end product. Therefore, claims 1 – 3, 8, and 9 are rejected.

Claims 4 and 5 are also rejected since fire retardant aramid fibers are either para-aramid or meta-aramid fibers. Further, it would have been obvious to one having ordinary skill in the art to choose meta-aramid fibers, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. *In re Leshin*, 125 USPQ 416. One of ordinary skill would choose the aramid fiber type by considering the fire resistance, wear resistance, and cost of the fibers and the desired properties of the end products. Therefore, claims 6 and 7 are rejected.

Finally, Ichibori et al. fails to teach the basis weight of the finished fabric. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to choose a fabric basis weight, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 105 USPQ 233 (CCPA 1955). One of ordinary skill in the art would be motivated to choose a fabric which would be light and comfortable to wear while also producing a fabric which is sufficiently heavy enough to protect the user for fire and related dangers. Therefore, claims 10 – 19 are rejected.

6. Claims 1 –19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edwards in view of Ichibori et al.

The features of Edwards have been set forth above. Edwards discloses controlling the properties of fire retardant fabrics by blending multiple types of fire retardant fibers together. However, Edwards fails to teach using nylon fibers in the blend. The features of Ichibori et al. have been set forth above. Ichibori et al. discloses adding natural or synthetic fibers to enhance the appearance, touch, comfort, and durability of the finished product depending on the properties desired in the finished product. Therefore, it would have been obvious to one having ordinary skill in the art to add natural or synthetic fibers as taught by Ichibori et al. to the fire retardant blended yarns disclosed by Edwards to enhance the appearance, touch, comfort, and durability of the finished product depending on the properties desired in the finished product. Thus, claims 1 – 3, 8, and 9 are rejected.

Further, as set forth above, it would have been obvious to one having ordinary skill in the art to choose meta-aramid fibers as the aramid fibers based on the desired strength, wear resistance, and fire resistance of the end product as well as the cost of the different fiber types. Therefore, claims 4 – 7 are rejected.

Finally, it would have been obvious to one having ordinary skill in the art to optimize the fabric's basis weight depending on the end use of the fabric and the desired strength, fire resistance, and durability required in the finished product, as set forth above. Thus, claims 10 – 19 are rejected.

7. Claims 1 – 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichibori et al. in view of Campbell et al. (6,787,228 B2).

The features of Ichibori et al. have been set forth above. Ichibori et al. discloses a fiber blend comprising modacrylic and nylon fibers, but fails to teach adding aramid fiber to the blend.

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Campbell et al. is drawn to flame resistant fabrics made from a blend of fibers. The fiber blend comprises at least 70% modacrylic fibers and at least 3% high performance, high energy absorptive fibers of material having a tenacity of at least about 4 grams/denier, flame resistance, affinity for high visibility dye stuffs, and good energy absorption (column 4, lines 9 – 14). The high performance, high energy fiber is preferably para-aramid or meta-aramid fibers such as Kevlar® or Nomex® (column 4, lines 43 – 56). The aramid fibers provide the blended yarn with added strength and energy absorption while maintaining the desired flame resistance and allowing the material to be dyed by conventional means (column 3, lines 42 – 55). Therefore, it would have been obvious to one having ordinary skill in the art to add up to about 30% aramid fibers as taught by Campbell et al. to the blend disclosed by Ichibori et al. to provide the blend with added strength and energy absorption while maintaining the desired flame resistance. Further, it would have been obvious to one having ordinary skill in the art to optimize the amount of each fiber in the blend to produce a fabric with the desired strength, durability, fire resistance, abrasion resistance, appearance, comfort, and touch for the end use. Thus, claims 1 – 9 are rejected.

Finally, Ichibori et al. fails to teach the basis weight of the finished fabric. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to choose a fabric basis weight, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 105 USPQ 233 (CCPA 1955). One of ordinary skill in the art would be motivated to choose a fabric which would be light and comfortable to



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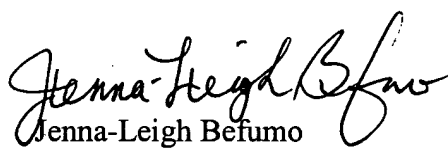
wear while also producing a fabric which is sufficiently heavy enough to protect the user for fire and related dangers. Therefore, claims 10 – 19 are rejected.

*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jenna-Leigh Befumo whose telephone number is (571) 272-1472. The examiner can normally be reached on Monday - Friday (8:00 - 5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jenna-Leigh Befumo  
August 22, 2005